

WHAT IS CLAIMED IS:

1. A plasma processing apparatus comprising:
a process chamber including an internal space which can be evacuated and a ceiling having an opening;
a supporting frame member placed along the periphery of said ceiling and including a ring-shaped supporting shelf protruding toward the center of said process chamber;
an insulating plate having its peripheral portion supported by the supporting shelf of said supporting frame member and airtightly covering the opening of said ceiling of said process chamber;
- 5 10 a mount base placed in said process chamber for mounting thereon a workpiece to be processed;
a planar antenna member placed above said insulating plate and including a microwave radiation hole for transmitting therethrough microwave used for generating plasma, said microwave being transmitted through said insulating plate into said process chamber; and
15 20 gas supply means for supplying a predetermined gas into said process chamber, wherein
said supporting shelf has an inner periphery including a corner portion shaped into a curve.
2. The plasma processing apparatus according to claim 1, wherein
said supporting shelf has the inner periphery including an upper-end corner portion and a lower-end corner portion, and at least one of said upper-end corner portion and said lower-end corner portion is shaped into a curve.
- 5 25 3. The plasma processing apparatus according to claim 1, wherein
said supporting shelf has the inner periphery including an upper-end corner portion and a lower-end corner portion, and both of said upper-end corner portion and said lower-end corner portion are shaped into respective curves.

4. The plasma processing apparatus according to claim 1, wherein the corner portion of the inner periphery of said supporting shelf has a radius of curvature of at least 1 mm.

5. The plasma processing apparatus according to claim 4, wherein the corner portion of the inner periphery of said supporting shelf has a radius of curvature of at most 10 mm.

6. The plasma processing apparatus according to claim 1, wherein said supporting shelf includes a supporting plane facing said insulating plate,

5 said supporting plane has a sealing groove in which a sealing member is held, and

 said sealing groove has a corner portion contacting said supporting plane and the corner portion is shaped into a curve.

7. The plasma processing apparatus according to claim 6, wherein said sealing groove has an inner corner portion and an outer corner portion that contact said supporting plane and said inner corner portion is shaped into a curve.

8. The plasma processing apparatus according to claim 1, wherein an inner peripheral edge of said supporting shelf is located at a node of microwave propagated in said insulating plate in its radial direction.

9. The plasma processing apparatus according to claim 8, wherein the inner peripheral edge of said supporting shelf is apart inward from an outer peripheral edge of said insulating plate by a length equal to one half of wavelength of said microwave propagated in said insulating plate 5 in the radial direction.